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UNITED STATES DISTRICT COURT
DISTRICT OF OREGON

NATIONAL WILDLIFE FED'N, et al., Plaintiffs, v. NATIONAL MARINE FISHERIES SERVICE And UNITED STATES ARMY CORPS OF ENGINEERS, Defendants.	Civ No. 01-00640-RE Declaration of John D. Wellschlager (Preliminary Injunction)

I, John D. Wellschlager, hereby state and declare:

1. I am currently the Manager of Operations Planning for the Bonneville Power Administration (BPA). In this capacity, I oversee the modeling of generation and electrical loads associated with the Federal Columbia River Power System (FCRPS). I also represent BPA on the Technical Management Team (TMT), an inter-agency technical group responsible for making recommendations on dam and reservoir operations of the FCRPS. I have been in this

position for approximately three years. Prior to this, I was a Project Representative in BPA's Federal Hydro Group, working directly with the Bureau of Reclamation (BOR) and the U.S. Army Corps of Engineers (COE) hydroelectric projects in the FCRPS on operation & maintenance and capital replacement projects associated with generation.

I have worked continuously for BPA since 1993. I received a Bachelor of Science degree in Mechanical Engineering from Portland State University in June 1987. Additional education includes a Bachelor of Science degree in Sociology from the University of Oregon in 1985. In July 1989, I successfully passed the Engineering in Training examination and received certification from the Oregon State Board of Engineering Examiners.

2. The FCRPS includes 31 hydroelectric projects and 1 nuclear plant. The hydroelectric projects range in size from 1.5 MW at Boise Diversion to 6800 MW at Grand Coulee. The nuclear plant is located in Richland, Washington and has a nameplate rating of 1,170 MW. Approximately 70 percent of BPA's power for meeting our federal contract obligations with public power agencies, cooperatives, investor owned utilities, and marketers comes from the federal hydro projects. The balance of energy comes from various BPA contract resources, including wind and the nuclear plant mentioned above. It is worth noting that approximately 95 percent of the total average hydro generation comes from only 13 projects. The major drivers for the system operation are requirements for flood control, operations designed to protect listed and non-listed fish, and power generation. Operations for meeting power obligations must ordinarily be consistent with the Action Agencies' obligations under the Endangered Species Act (ESA) and to provide flood control, although emergency conditions may arise that require the Action Agencies' to place a priority on rectifying the emergency without regard to other ordinary constraints.

3. Matching Energy to Load. One of the most fundamental principles of managing the power system is that generation must always equal demand. Put another way, the system must always produce exactly the same amount of energy on a second-to-second basis as demand (or load) requires. Since load is constantly changing up or down in response to the demands of electricity users, the system must constantly adjust generation levels to match these changing loads. Failing to match generation to load creates a situation where required transmission system operating frequency (60 cycles per second) cannot be maintained.[1] To help prevent events where energy does not match load, the Western Electric Coordinating Council (WECC), the organization that establishes system reliability criteria, created guidelines requiring utilities to maintain generation reserves. These guidelines, known as Minimum Operating Reliability Criteria (MORC), require utilities to carry three types of reserves. Of these reserves, between 80 MW and 250 MW must be on control, between 150 MW and 300 MW must be spinning reserves, and between 150 MW and 300 MW must be operating reserves. *Reserves on control* can be deployed in 4 seconds, while *spinning reserves* are synchronized to the transmission grid and can be fully deployed in 10 minutes. *Non-spinning operating reserves* can be fully deployed in 10 minutes but are not synchronized to the transmission grid. These reserves are intended to ensure that each power system operator (such as BPA) has a minimal amount of additional generating capacity available at all times. These MORC reserves are intended either to meet unanticipated power demands or to generate power to replace scheduled or unscheduled generation outages. Of the three types of mandatory reserves described above, only Reserves on

[1] Think of the 60 cycles per second as a constant "pressure" required to keep the transmission control area served by BPA stable. Should the system be allowed to drop below 60 cycles per second, pressure drops and energy from adjacent control areas gets drawn into BPA's control area. Should the system exceed 60 cycles per second, pressure increases and forces energy out of BPA's control area into adjacent systems. Obviously, such events destabilize the system.

Control are required to be linked to Automatic Generation Control (AGC), defined below. Having these reserves available to respond to short-term energy needs is vital to maintain system reliability. These reserves "bridge the gap" when small short-term energy demands on the system increase beyond the level planned for. BPA is required at all times to hold a total of 5 percent in combined reserves for all on-line hydro generation, and 7.5 percent in reserve for all thermal resources. [2]

5. To provide the instantaneous response required to keep this complex system in balance, BPA relies upon AGC. AGC is a computerized management system that allows the hydroelectric generators to instantaneously follow load requirements by increasing or decreasing the amount of water allowed to pass through turbines, thereby adjusting generation levels up or down. This enables generation to match load on a second to second basis, which, as described above, is a fundamental requirement of all electric power systems.

6. Summer 2005 Experience: In light of the intricate requirements to instantaneously balance energy on the system with load, it is important to understand that any directive that causes the system to operate within substantially reduced parameters severely limits BPA's ability to make necessary adjustments in generation. To help highlight this it is useful to review the operational challenges faced by BPA last summer when the court-ordered specified amounts of spill at five FCRPS projects. To ensure compliance with the court order, BPA, in coordination with the COE, took all five of the spill-ordered projects off of AGC. The COE's and BPA's intent was to prevent AGC from inadvertently shutting off the court-ordered spill, which might have otherwise occurred in the ordinary course of operation. As a matter of prudence, BPA and the COE took this approach to minimize the risk of violating the court order.

[2] Reserves may only be used for up to 90 minutes.

7. For run of the river projects (such as the projects on the Lower Snake River and lower Columbia River), the ability to store water for power generation is comparatively minimal. During the fish migration season, to aid fish passage and to increase water velocity, storage is even more confined. The four Lower Snake River dams are only allowed to store up to one foot of water above Minimum Operating Pool. Therefore, very little stored water is available to increase generation if and when short-term energy demands increase. Therefore, reducing spill is often the only option immediately available to the system. [3]The point is that by taking 5 of the 10 load following projects off AGC, BPA significantly impacted the FCRPS's ability to meet unplanned increases in load. The amount of generation lost by disabling the AGC at the 5 enjoined projects was approximately 1100 MW to 1500 MW of sustained generation capacity over 6 peak hours, and as much as 1500 MW to 2000 MW on a single hour of generation capacity. As generation capacity is removed from a project (e.g., by turning it off AGC), this necessarily limits the operational flexibility at other projects because they are now called upon to meet the generation demand formerly served by the AGC disabled projects. Assuming that energy demand remains constant, taking projects off AGC results in a weakening of the system's overall reliability.

8. While no power emergencies were declared during the June 20 to August 31 time-period, BPA did experience numerous potential power problems and was forced to operate the system outside of industry-wide reliability guidelines much more frequently than it did during the same time period in 2004. See Viles declaration, at paragraph 9.

[3] It would also be possible to increase generation if BPA chose to violate other operational constrictions such as flood control, irrigation, or fish passage requirements.

9. Understanding the Types of Emergencies Which Can Result in Blackouts.

Like all power systems, criteria for managing system emergencies on the FCRPS have always been an operational necessity and contingency plans to deal with such events have long been in place. In recognition of this, "Protocols for Emergency Operations in Response to Generation, Transmission or Other Emergencies" has been a part of the Action Agencies Water Management Plan (WMP) since 1996 – it is currently Appendix 1 of the 2005 WMP. These protocols were developed by the Action Agencies in response to an emergency that began on August 10, 1996 on the FCRPS and cascaded into an event that blacked out parts of 13 states.

10. Different types of emergency conditions allow differing response times. Time permitting, specific actions called for in the WMP require that interruptions to biological operations would occur only as a last resort. However, because there may be no alternative available, it is possible that a power emergency would require the Action Agencies to temporarily disrupt a biologically beneficial operation, such as spill. This becomes increasingly likely, though still remaining the last resort, as the number of dams with a fixed court-ordered operation increases.

11. Under the WMP, emergencies are categorized by level of degree of immediacy. As defined in Appendix 1 of the WMP, "A Red Level emergency is an emergency in which time is essential and quick action is required because of imminent public safety concerns. For the power system this type of emergency is characterized by transmission system instability or the potential for electrical service to be interrupted. A Yellow Level emergency is an emergency which takes more time to develop. It can sometimes be seen hours in advance and usually allows sufficient time to implement a wider array of options and involve more people in the solution. Examples of this type of emergency are fires moving towards power lines, forecasts for high

loads in the afternoon or notices from plant operators of a potential problem requiring them to take generation off line quickly if a problem persists. For the power system, this type of emergency is characterized by a stable system with no immediate loss of load-serving capability, but it does warrant additional precautions be taken.

12. The chart below displays the actions that are available to respond to Red and Yellow Level emergencies. During a Red Level emergency (depicted in the first two columns), BPA must take immediate actions to maintain system stability. As such, coordination opportunities outside those required to immediately remedy the problem are extremely limited, or simply not possible. Some examples of corrective action include: purchasing additional energy/capacity on the open market, bringing additional generators back into service, and increasing flows out of the headwater projects. While these actions are valuable and used to the maximum extent possible, it is not possible to use them when immediate responses are required. For example, power purchases take time to negotiate and transact, and cannot be arranged quickly enough to cover generation lost midway through the hour. For Yellow Level Emergencies (shown in the last two columns) there is generally greater time to respond and therefore more options for addressing the emergency, potentially including consultation with TMT.

Response Options for FCRPS System Emergencies

Options					
	Automatic System Operations	Controlled by AGC	Controlled by AGC	------	-----
	System Flexibility (Coordinated OPS with COE/USBR)	None	Limited	Often available to minimize impact to Fish Operations	Available to the extent Fish Operations are not adversely impacted
	Market Solutions	None	None in hour 1, limited opportunities in hour 2	Market opportunities may be possible	Most likely solution
	BiOp Measures	Controlled by AGC	Controlled by AGC – May impact fish operations	Less likely to require deliberate interruption of fish operations	Unlikely to require deliberate interruption of fish operations
		4 Seconds	***4 sec to 90 minutes***	***Beyond 90 minutes***	***Beyond Day 1***
			Timeframe		

Definitions:

AGC = Automatic generation control. Units on spinning reserve automatically pick up generation for load imbalance.
Market = WECC wholesale power market.
BiOp Measures = 2004 NOAA Fisheries Biological Opinion & Action Agencies' Updated Proposed Action

13. Broadly, the types of system contingencies that cause either red or yellow condition emergency conditions are "generation emergencies" and "transmission emergencies."

14. Generation Emergencies – this is the potential for, or actual insufficiency of, electrical generation to satisfy electrical demand or load in a particular geographical area. This could be due to a large power plant such as the 1170 MW Columbia Generating Station or a large generating unit at a dam like Grand Coulee, tripping offline.

15. Transmission Emergencies – are the potential or actual loss or limitation in the ability to move electricity from the site of generation to that part of the system where the energy is required. This may be caused by fire under transmission lines, lightning strikes, and vandalism among other things.

16. Emergency procedures are in place and will be implemented to respond to emergencies while avoiding impacts to fish operations whenever possible.

17. Consistent with previous FCRPS BiOp operations of the mainstem reservoirs at MOP and reservoir elevation flexibility, and in view of the authorized project purpose of power production, BPA intends to continue to use the flexibility within the defined elevation limits to meet power reserves and other loading following requirements to ensure the reliable operation of the regional power and transmission system.

18. While coordination during a power emergency may be feasible under certain circumstances, when a power emergency threatens system reliability, or a blackout, there usually is not sufficient time available to notify and coordinate with the Court, plaintiffs, or TMT, prior to initiating actions to avert the emergency. If the Court was to issue an injunction and it became necessary to take an action that could be viewed as inconsistent with that order, the Action Agencies would notify the Court, the plaintiffs, and the TMT as soon as is reasonably possible. If and when time is available, the Action Agencies will consult with the TMT prior to taking emergency action, as described in the Power Emergency Protocols. Further, the Action Agencies would document what actions were taken, and explain why such actions were necessary.

19. As stated above, these principles have already been acknowledged in past Biological Opinions[4]. They are also consistent with federal ESA regulations that recognize the Action Agencies must be granted some latitude to take actions during emergency situations[5]. Finally, the principles are consistent with the Power Emergency Protocols developed by the Action Agencies and provided to the TMT, during the 2005 summer spill order. See plan

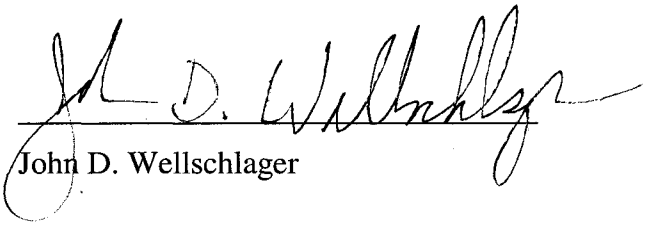
[4] See, for example, page 9-62 of the 2000 FCRPS Biological Opinion.
[5] See 50 CFR 402.05.

transmitted by an August 25, 2005 letter sent to Todd True and Steve Mashuda from Ruth Ann Lowery. Exhibits 1 and 2. They are currently contained in the Action Agencies' 2005 WMP.

Conclusion

20. Regardless of the cause of system emergencies, BPA is dedicated to meeting load and maintaining a safe, stable power grid while meeting all its other obligations, including compliance with any orders of the Court. It would be irresponsible for the Action Agencies to take any steps that would compromise system stability. Blackouts are not an acceptable outcome for the region since they pose a threat to human health and safety. In addition, it would violate BPA's statutory obligations. See 16 USC 839(2). To these ends, BPA wishes to inform the Court that BPA will operate all projects in the FCRPS according to Appendix 1 of the WMP with a commitment to work through the Emergency Protocols as outlined therein. BPA will ensure that the least disruptive operational response to any particular emergency is our first resort. Lastly, BPA will notify the Court if a power emergency is declared, and if we have departed from any court-ordered operation.

I declare under penalty of perjury that the foregoing is true and correct. Executed on November 22, 2005 in Portland, Oregon.



John D. Wellschlager

Exhibit 1

U.S. Department of Justice

Environment and Natural Resources Division

RAL
90-8-6-05111

Wildlife and Marine Resources Section
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August 25, 2005

Via E-mail and First Class Mail

Todd D. True
Stephen D. Mashuda
Earthjustice
705 Second Avenue, Suite 203
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Re: National Wildlife Federation, *et al.* v. NMFS, Civ. No. 01-640 RE

Dear Todd and Steve:

Enclosed is a document providing the FCRPS Action Agencies' technical and explanatory notes of the items on the "Group 1" and "Group 2" lists in the 2005 Emergency Protocol Action List of the Technical Management Team ("TMT"). This document will be provided to the TMT and is hereby also being provided to Plaintiffs, as was discussed earlier this Summer.

Sincerely,

Ruth Ann Lowery
Trial Attorney
(202) 305-0217

Enclosure

Exhibit 2

Action Agency Clarification of Group 1 and Group 2 Items in the 2005 TMT Emergency Protocols List

August 2005

I. Prefatory Note:

The items below are described as they may be relevant in the event of a yellow or red emergency, as those terms are defined in the TMT emergency protocols, with particular focus on how they may apply during power emergencies for the remainder of the court-ordered spill at five projects during Summer 2005. BPA Management will notify the Corps in advance of any power emergency when possible. Notification to TMT will be given as outlined in: 2005 Water Management Plan – Appendix 1 Emergency Protocols.

Power emergencies can range from instantaneous to more extended situations, with the type of action taken to ameliorate the emergency dependent on the time available to respond. Thus, the protocols should not be interpreted to present a fixed series of actions that can be taken in sequence for all situations. In addition, certain of the protocols that have been in existence for some time no longer reflect current circumstances.

During a power emergency (time permitting), BPA will implement approaches that alter spill at the enjoined projects as a last resort, after non-spill alterations have been exhausted (as identified below). For instantaneous events that have no advance warning, the Automatic Generation Control (AGC) may be triggered to stabilize the transmission system until such time as Group 1 and 2 actions can be implemented to balance the system so that generation equals demand. For urgent energy situations that may last beyond two hours, market purchases are feasible (it may take as much as two hours for BPA schedulers to negotiate and transact power sales). Other Group 1 and Group 2 actions may be feasible and implemented in a shorter time frame. Actions taken in an emergency situation, and the reasons for the course of action, will be documented by the Action Agency or Agencies responding to the emergency.

II. Technical Notes To Action Lists:

For each of the items listed below, the Action Agency responsible for its implementation (the Corps and/or BOR as to operational items and BPA as to market-related and transmission system options) provides the following notes.

A. Group 1 (first taken)

1. Return all units to service by canceling or postponing scheduled outages

Returning units to service from scheduled outages may be considered given adequate amount of water is available to generate - during low summer flows, there may not be sufficient flows to increase the number of units generating at a project.

Project operators attempt to anticipate the potential need to cancel or postpone scheduled outages when circumstances arise, such as BPA load projections demonstrating that increased generation is needed. The postponement of scheduled outages can be initiated by the Corps or Bureau of Reclamation.

The time involved to cancel or postpone work varies greatly, depending on the nature and regularity of the outage. The ability to cancel or postpone outages varies with the specific type of outage. For example, the monthly inspection of fish screens, which requires each unit to be out of service for a couple of hours while an underwater video camera inspects the screens, requires relatively little lead time to cancel or postpone.

In contrast, interruption of more complex annual or multi-year maintenance on units requires significant lead time, and these units would not be desirable candidates for responding to emergencies. For instance, if a unit is "dewatered," then it can take a number of days to refill the scroll case, remove the stop logs, etc., to bring the unit back online. Finally, units undergoing major rehabilitation and construction are not considered when looking to cancel or delay outages because they are disassembled.

Delays and/or cancellations of scheduled outages are coordinated through RCC, BPA power scheduling, respective Corps' District offices of construction and contracting, and the specific projects.

2. Put into service all possible generators (e.g., Grand Coulee pump-generators, Hungry Horse, Willamette basin)

Depending on particular circumstances, this option may be available and could be implemented in a relatively short period of time, within limitations. To implement this option, the Reservoir Control Center ("RCC") would quickly evaluate the status of flows at all dams and generating units that may be candidates to put back into service. In the summer there are generally more generators available at a given project than are in use because of the lower river flows. In addition, other constraints such as pool levels and ramp rates (implemented for the protection of fish) may limit how long or how fast these "excess" units could be employed. On the other hand, during the spring freshet it is less likely that extra capacity will be available because projects may already be generating with all the units. This option has limited applicability during the current July-August operations.

3. Increase flows at specific projects to meet peak generation need without impacting spill programs

This action would need to be coordinated with BPA, RCC, and the specific projects. Some headwater projects (e.g., Hungry Horse, Libby, Dworshak, or Willamette projects) may be able to increase flow under particular circumstances. If Hungry Horse, Libby, Dworshak, or Willamette projects are not releasing full powerhouse outflow capacity, those projects may be able to increase flow for a short duration. Each individual project may not be able to immediately increase from its current outflow to full powerhouse capacity because of ramp rates, or other in-river conditions downstream. Each instance of using these projects will have to be taken on a case by case basis because of changing hydrologic conditions Where feasible, this could be implemented in a relatively short time frame (generally less than an hour).

4. Buy energy/capacity at market prices

This protocol will be implemented when time allows and as soon as practical. However, as it takes time to negotiate and transact energy market purchases, this option may not always be available for resolving some kinds of emergencies

5. Reduce or eliminate BPA non-firm contracts

This particular protocol has been obviated, in that BPA no longer has any "non-firm" power contracts. Prior to 2001, BPA did have interruptible rights with the Direct Service Industries. Many of the plants, however, are no longer in operation and remaining contracts are for firm service only.

6. **Exceed daily draft limits**

The maximum draft rate for Lake Roosevelt/Grand Coulee Dam is 1.5 feet within any 24-hour moving window. Any anticipated drawdown needs beyond the 1.5 foot limit must be authorized by the Power Manager, with concurrence from the Regional Director or their designated representative. The draft rate limit is set to limit landslides along the reservoir.

B. Group 2 (second taken)

1. **Operate projects outside of minimum operating pool ranges**

This action refers to filling the four lower Snake River projects above the summer minimum operating pool ("MOP"), or MOP + 1, operating range (instituted for the protection of fish) and drafting the water through the generating units. This option is not readily available during summer 2005, in light of the spill ordered by the District Court for the District of Oregon. While filling the reservoirs, spill would have to be reduced or stopped at the lower Snake River projects. This operation requires at least one day advance notice to fill the reservoirs.

2. **Adjust flows outside of planned targets or as preset by TMT**

During the July-August period, storage projects are typically drafting on a scheduled rate per the Updated Proposed Action to meet end-of-August elevations. Therefore, the TMT usually does not set downstream flow objectives.

As discussed above, in the event of a generation emergency operation, it may be feasible and appropriate to increase river flows. However, each individual project may not be able to immediately increase from its current outflow to full powerhouse capacity because of ramp rates, or other in-river conditions downstream. Each instance of using these projects will have to be considered on a case by case basis because of changing hydrologic conditions. This action would need to be coordinated with BPA, RCC, and the specific projects, but, generally speaking, outflow could be increased in a relatively short time frame (generally less than an hour).

3. **Restrict intertie capacity reducing import or export**

As is relevant to this Summer's court-ordered spill operations, BPA Transmission Business Line will limit redispatch requests (moving the production of generation from one powerhouse to another to address transmission constraints) that would cause reduction of spill at enjoined projects to only declared transmission emergencies.

4. **Shed other non-BPA non-firm contracts**

BPA no longer has the authority to shed non-BPA power contracts. Historically, BPA did have such rights.

5. **Reduce firm loads**

While it may be necessary to consider this protocol action under extreme circumstances, BPA cannot curtail firm loads without breaching its contractual obligations, potentially violating certain statutory mandates that may impact health and human safety. See e.g. 16 USC 839c(b)(1).

6. Violate flood control or other first priority non-power requirement

The importance of meeting flood control targets varies with the time of year. During July and August, for example, flood control is generally less of an issue than during the winter months. In winter, drafting below the upper flood control rule curve could impact meeting desired April flood control objectives. This action would need to be coordinated with BPA, RCC, and the specific projects, but generally could be implemented in a relatively short time frame (less than an hour).

7. Buy energy/capacity at any price

BPA will make market purchases to meet its load obligations. However, BPA cannot guarantee that it would do so under all circumstances. For example, at times there may be an insufficient supply of power to remedy the energy problem.